1408

OFFICE MEMORANDUM

TO: *WCJ, JDS*

DATE: *March 19, 1982*

FROM: *TRB*

SUBJECT: *Incident Report Summary of Events on March 1, '8*

Please summarize the incident report for events on March 1. Use the attached report (incident) from last year's burnout as a guide in preparing this year's narrative. Please return to me as soon as possible.

/pgc

UCN-3841
(12356 6-70)

UNION CARBIDE

NUCLEAR DIVISION

INTERNAL CORRESPONDENCE

March 12, 1982

D. T. Duncan, Industrial Hygiene Department, K-303-7, MS 328, K-25
H. R. Dyer, Radiation Safety, K-1570B, MS 250, K-25
M. E. Mitchell, Environmental Management, K-303-7, MS 338, K-25
J. D. Sherrod, Operational Safety Department, K-1003, MS 423, K-25

K-502-2.7 Incident Report

For the wrap-up report on the K-502-2.9 incident of May 27, 1981, each of your departments supplied a narrative of the results of your involvement in the protection of personnel and the effect of the incident on the environment. These write-ups, through several recycles, were edited to the attached narratives and included in the reports.

The investigating committee for the incident of March 1, 1982, in K-502-2.7, will be required to summarize their findings in a similar report. You are requested to supply similar narratives concerning the current incident to the undersigned. The committee is attempting to assembly the first draft of the report by Friday, March 19, 1982. If I may be of assistance in any way, please feel free to phone me.

L R Kellogg

D. R. Kellogg, K-1001, MS 193, K-25 (4-9447)

dd

Attachment

cc/att: R. W. Glass, 1000, MS 105C, X-10
J. W. Hill, K-1001, MS 173, K-25
J. E. Shoemaker, K-303-8, MS 325, K-25
M. J. Stephenson, 9733-3, MS 003, Y-12

K. Personnel, and Environmental Considerations

1. Health Physics and Radiation Safety

There were no personal injuries or employee overexposures experienced as a result of the incident or during the emergency activities associated with controlling the incident. ORGDP emergency personnel effectively performed their assigned duties in accordance with applicable plant emergency procedures. Increased pressures and elevated temperatures reached near the equipment could have been hazardous to personnel if they had remained in the immediate vicinity during the time of the internal reactions within the containment vessel (converter). The gases released and the by-products of the reaction necessitated the wearing of prescribed and appropriate personal protective equipment during the amelioration of the incident.

Initial air samples taken at each release site revealed the presence of airborne uranium. However, within a few minutes all air sampling showed no detectable airborne uranium. Air sampling continued at the release site as well as surrounding buildings, and no further airborne uranium was detected. Area surveys for surface uranium contamination were simultaneously conducted. No surface contamination as a result of this incident was detected except in the immediate vicinity of the equipment in K-29 where the release occurred. Subsequent urinalysis sampling of personnel in the area at the time of the release and of the emergency response personnel revealed no significant exposures to airborne uranium. By about 1430, all areas had been initially surveyed and a report was made to the plant emergency director that all areas were clear for re-entry.

As a result of discussions with emergency personnel who had entered the area, it was apparent that there had not been a major UF_6 release; therefore, the criticality safety concern was that of excluding moderating materials, such as water, thereby maintaining "moderation control" in the cascade. Since the sprinkler system did not activate, a criticality was considered to be impossible since water was not used. Also, since the Radiation Alarm System had not activated and the Health Physics monitoring data gave no unusual indications, it was concluded that a criticality had not occurred. The Health Physics Group and the Criticality Safety Group continued to monitor the cleanup operations from this incident. Detailed sampling locations and results are presented in Appendix V.

2. Safety Program

The ORGDP has a remarkable safety performance record including significant reductions in Recordable Injuries and Illnesses, fewer off-the-job injuries, decreased number of government-owned motor vehicle accidents, and improved housekeeping conditions. The various plant divisions maintain very active and visible safety and accident prevention programs. These divisional programs are planned and developed to include (1) interesting and motivating safety meetings, (2) regularly scheduled inspection and audits, (3) effective accident investigation programs, (4) comprehensive orientation and training programs, (5) maintenance of current safety standards and procedures (6) a thorough Job Safety Analysis Program, (7) an employee safety suggestion program, (8) divisional safety action plans, (9) strict safety and electrical work permit systems, (10) an up-to-date personal protective equipment program, (11) safety promotion and communication systems, (12) a current and accurate accident and injury reporting and recordkeeping system, and (13) a comprehensive off-the-job safety program.

DOE audits, appraisals, and reviews are conducted annually as required by DOE Order 5482.1. The most recent annual DOE Industrial and Construction Safety Audit was conducted May 19-23, 1980. The overall ORGDP safety programs were rated "superior" with no recommendations.

The result of the annual UCC-ND Safety and Health Audit conducted November 17-21, 1980, was stated as follows: "ORGDP continues to administer exemplary safety and health programs in a highly professional and effective manner consistent with UCC, DOE, UCC-ND, and ORGDP policies and procedures."

ORGDP recently won the first UCC Silver Award for operating 12,000,000 employee-hours, December 13, 1978, thru January 1, 1980, without a chargeable lost workday case. This was the first award presented in the Corporation under the new UCC Award Plan.

3. Environmental

The gas release into the K-29 building resulted in visible airborne emissions from the building ventilation system, but did not result in any discernable impact to the public or the environment. In fact, ambient air uranium concentrations were found to be below the detection limit ($1\ \mu g/m^3$) at all perimeter fence sampling stations. Ambient air fluoride concentrations downwind of the release were determined to be at normal background levels. Simi-

larily, uranium concentrations in soil, vegetation, and surface streams (Poplar Creek and the Clinch River) downwind of the release were also found to be no greater than normal. Since there was no actuation of the facility fire protection (wet sprinkler) system, there were no liquid releases from the building.

When the release occurred at 1143, the wind was from the east at about 3 to 5 mph. By 1210, it had shifted to a general southerly direction and continued to be from the southeast, south, and southwest throughout the duration of the release. The wind speed remained relatively constant at about 5 mph except for a brief period when a thunderstorm passed over the plant. The relative humidity was about 90 percent and the emissions visibly remained close to the K-29 building roof and dissipated in the downwind direction.

The particular samplers utilized for determining the fenceline concentration of uranium are operated continuously for the primary purpose of quantifying atypical releases. These samplers normally reveal ambient air concentrations of from 1 to 2 $\mu g/m^3$. Based on a gaussian plume dispersion model prediction, it has been estimated that a release of as little as 2 kilograms of uranium in a two-hour period could have been detected under the meteorological conditions experienced on May 27, 1981. The sampler results on this day were negative; that is, the uranium concentrations were less than 1 $\mu g/m^3$. Therefore, the uranium release is quantified at less than 2 kilograms. The sampling system and the ability to detemine on- and offsite environmental impacts resulting from airborne releases comply with DOE Manual Chapter 0513. A more detailed analysis of the environmental factors associated with the incident is provided in Appendix VI.

Historically, the ORGDP environmental protection program has been exemplary, as reflected by the "superior" rating received from the DOE appraisals for 1979 and 1980. As noted in the 1980 appraisal, "The program continues to receive excellent management support. Internal communication channels are clear and effective. Employee education efforts have been outstanding."